WSCAC Meeting Agenda
October 27, 2016

(times are approximate)

9:30 General Program Updates

9:45 Final Vapor Intrusion Guidance Overview

10:30 Other Guidance Updates

10:40 Active Exposure Pathway Mitigation Measure – remote monitoring status

10:50 MCP Amendments

11:30 Adjourn

MassDEP
Commonwealth of Massachusetts
Executive Office of Energy & Environmental Affairs

Department of Environmental Protection
One Winter Street Boston, MA 02108 • 617-292-5500

Charles D. Baker
Governor

Karyn E. Polito
Lieutenant Governor

Matthew A. Beaton
Secretary

Martin Suuberg
Commissioner

VAPOR INTRUSION GUIDANCE:

SITE ASSESSMENT, MITIGATION AND CLOSURE

Policy #WSC-16-435

This document provides guidance on investigating, assessing, understanding, and mitigating vapor intrusion at disposal sites regulated under Massachusetts General Law chapter 21E and the Massachusetts Contingency Plan (the "MCP" or 310 CMR 40.0000).

This document is intended solely as guidance. It does not create any substantive or procedural rights, and is not enforceable by any party in any administrative proceeding with the Commonwealth. This document provides guidance on approaches MassDEP considers acceptable for meeting the general requirements set forth in the MCP. Parties using this guidance should be aware that other acceptable alternatives may be available for achieving compliance with general regulatory requirements.

Paul W. Locke
Assistant Commissioner
Bureau of Waste Site Cleanup

October 14, 2016

2016 MassDEP VI Guidance

Section 1 – Introduction

Section 2 – Assessment

Section 3 – Mitigation of the Vapor Intrusion Pathway

Section 4 – Regulatory Framework

Section 5 – Communication and Public Involvement

Section 6 – Obtaining Access at Vapor Intrusion Sites

2016 MassDEP VI Guidance

Appendix I – Indoor Air Threshold Values for the Evaluation of a Vapor Intrusion Pathway

Appendix II – Sub-Slab Soil Gas Screening Values

Appendix III – Air Sampling Information

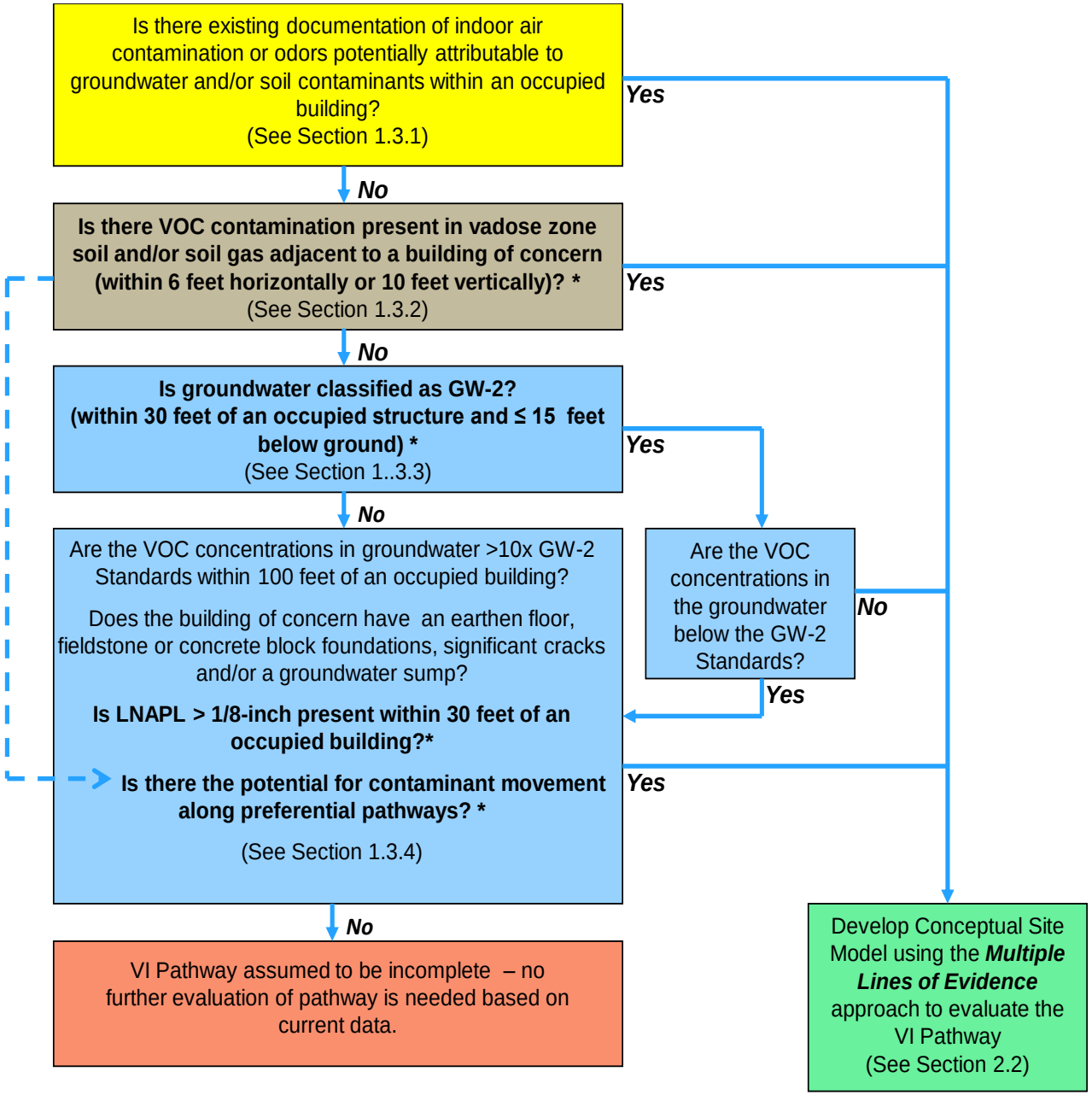
Appendix IV – MassDEP's Recommended Specifications for the Design and Construction of SSD Systems

Section 1: Introduction

- Purpose
- Guidance Overview
- When to Evaluate the Vapor Intrusion Pathway

Evaluation of vapor intrusion potential at sites where VOCs have been released to the environment

(Bold denotes reportable condition)



Section 2: Assessment

- Conceptual Site Model
- Vapor Intrusion Pathway Assessment
  - Multiple Lines of Evidence
  - How to use indoor air Threshold Values and Sub-Slab Soil Gas Screening Values
  - Inclusion Distance Approach (petroleum sources)
- Indoor Air Exposure Assessment
  - Decision Matrices (Tables 2-3 and 2-4)
- Risk Characterization
  - Current and Future Risk

Sampling Recommendations

Soil

- not a conclusive Line of Evidence for the vapor intrusion pathway

Groundwater

- conducted at/near water table, can be diluted by heavy precipitation
- determine horizontal extent of VOCs exceeding GW-2 Standard

Exterior Soil Gas

- better indicator of soil contamination than soil data
- analyte lists should not be limited during initial sampling

Sub-Slab Soil Gas

- Preferred to assess *potential for* Vapor Intrusion
- Significant spatial and temporal variability

Indoor Air

- collected from locations most likely to be impacted by VOCs
- Target conservative conditions
- Evaluate confounding sources (indoor and outside)
- Multiple rounds needed because of variability

Sampling Recommendations

Indoor Air – How to Sample

- Evacuated canisters are recommended for the collection of indoor air samples
  - Residential: 24-hour, if possible; Commercial: 8-hour; Minimum: 4-hour

Consider Indoor Air Screening Using Portable GC/MS or PID/FID **UPDATED IN FINAL DRAFT**

- Useful in accelerating the identification VI pathway where short-term exposures have the potential to result in an Imminent Hazard
- Increases sampling density at lower costs and with quicker results
- Should be verified with laboratory analysis using evacuated canisters to allow for comparison and confirmation of the screening results
- May be sufficient to identify a potential IH, but should not be used to rule out an IH

Multiple Lines of Evidence Approach

- Concentrations of VOCs in **groundwater and** soil
- Exterior soil gas
- **Sub-slab soil gas**
  - Compare to sub-slab soil gas screening values **(NO CHANGES)**

  Concentrations of VOCs in **indoor air**
  - Compare to residential and commercial/industrial threshold values **(NO CHANGES)**
- The presence of outdoor sources
- The presence of indoor sources
- The presence of LNAPL or DNAPL
- The presence of a preferential pathway
- Other Lines of Evidence?? (use the CSM)

Exposure Point Concentrations

Future Use for Existing Buildings:

- Current indoor air concentrations may be used for future EPCs if change in building conditions would NOT result in potential changes to VOC concentration in indoor air
- For building where VOC concentration in indoor air are significantly lower than expected based on VOC concentration in sub-slab soil gas, the current EPCs cannot be used for future EPCs

Section 3: Mitigation

- Addressing Sources of OHM Contamination and Migration Control
- Response Actions to Quickly Reduce VOC Concentrations in Indoor Air
- Indoor Air Pathway Mitigation
- Active Mitigation Systems
- Passive Measures
- Demonstration of Mitigation Effectiveness, Maintenance and Monitoring
- Closure Sampling to Demonstrate that a Mitigation System is No Longer Needed

Vapor Intrusion Mitigation

- Source control and removal is the best long-term approach to address vapor intrusion (and all sites)
- Active sub-slab depressurization (SSD) systems are considered by MassDEP to be an effective and reliable method for longer-term vapor intrusion mitigation
- Other vapor intrusion mitigation approaches are outlined in the guidance
- Guidance provides recommendations for vapor intrusion mitigation monitoring – differences between active systems and passive measure

Mitigation Measures

- Source Removal or Control
  - Ventilation
  - Sealing openings
- Prompt Response Actions in Existing Buildings
  - Ventilation
  - Building Pressurization/HVAC Modification
  - Air Purifying Units (APUs) **UPDATED IN FINAL DRAFT**
- Pathway Elimination
  - Building considerations,
  - Sub-slab soil conditions
  - Active Systems
  - Passive Measures

Mitigation System Monitoring

- Sampling to Demonstrate Effectiveness
  - Active systems involve verification of negative pressure beneath the slab
  - Passive measures monitoring dependent on contaminant concentrations prior to installation of measure
- On-Going Maintenance and Monitoring
  - Inspections of active systems to confirm system is operating and sub-slab negative pressures are maintained
    - Sampling not expected unless decrease in negative pressures below design criteria
  - Inspections of passive measures to confirm integrity of system
    - Sampling not expected after Permanent Soln provided no changes to the building or passive measures that would affect system **CLARIFIED IN FINAL DRAFT**
- To Support Termination of Mitigation Measures

Section 4: Regulatory Framework

- Common Reporting Obligations Related to the VI Pathway
- Immediate Response Actions
- Critical Exposure Pathways (CEPs)
- Tier Classification and the VI Pathway
- Comprehensive Response Actions at VI Sites
- Requirements and Considerations for Closure at Sites with VI Pathways of Concern
- Permanent and Temporary Solutions
- Post-Closure Requirements and Considerations for Disposal Sites with VI Concerns

Critical Exposure Pathways

Response Actions to eliminate/mitigate CEPs generally considered feasibly through Installation of an active SSD system

Clarified Figure 4-3: Addressing Critical Exposure Pathways from Vapor Intrusion

Provisions for IRA with CEP Completion

- CEP eliminated using passive measures
- IRA feasibility study concludes addressing CEP is not feasible
- Phase III feasibility study concludes addressing CEP not feasible
- Mitigation of CEP is continued by incorporation into Phase IV RIP and possibly as a PS with Conditions

Site Closure

Permanent Solution (PS) with Conditions requiring AUL (Table 4-1) (final guidance has separate tables for required and optional AULs)

- Relies on an Active Exposure Pathway Mitigation Measure (AEPMM)
  - AUL and telemetry required
  - Not applicable if IH would result within 60 days of system shutdown (added guidance on how to determine)
  - Affected parties/MassDEP must be notified if shutdown lasts 30 days
  - Certification that money is available for repairs
  - Annual certification
- Relies on limiting use of existing building
- Relies on Passive Exposure Pathway Mitigation Measures
- Relies on maintaining building condition to prevent VI where VOCs in sub-slab soil gas may represent future risk

Site Closure

PS with Conditions - AUL not required

- Applies to situations where the absence of an occupied building or structure in an area which the groundwater would otherwise be classified as GW-2 where the concentrations of oil and/or hazardous material in the groundwater exceed the GW-2 Standards

Site Closure

Optional AUL Use for VI Scenario (Table 4-2)

- PS achieved at disposal site where GW-2 Standards are exceeded with no current building
- PS achieved where VOCs in soil or exterior soil gas at undeveloped site may represent a risk of VI to future buildings
- TS with AEPMM to maintain NSH
- TS at facility that uses same VOCs that are site COCs

Section 5: Public Involvement

- Introduction
- Requirements for Notification of Property Owners and Affected Individuals
- General Public Notification and Involvement
- Notice to Local Officials
- Coordination with Local Officials
- Optional Public Involvement Activities

Appendix I: Indoor Air TVs

- Introduction
- Typical Indoor Air Concentrations
- Threshold Values
  - **DID NOT REVISE TVs, INCLUDING TCE AND 1,2-DCA**
- Single-Chemical Exposure Considerations
- Table I-A: Residential Threshold Values
- Table I-B: Commercial/Industrial Threshold Values
- Table I-C: Risk Management Criteria Used to Develop the TVs
- Table I-D: Analytical Reporting Limits

Appendix II: Sub-Slab Soil Gas Screening Values

- Introduction
- Derivation of Sub-Slab Soil Gas Screening Values
  - **FINAL DRAFT RETAINED DILUTION FACTOR OF 70 AFTER REVIEW OF 2012 EPA SUB-SLAB ATTENUATION FACTORS**
- Use of the Sub-Slab Soil Gas Screening Values
- Table II-A: Residential Sub-Slab Screening Values
- Table II-B: Commercial/Industrial Sub-Slab Soil Gas Screening Values

Appendix III:
Air Sampling Information

- Introduction
- Sample Collection
- Procedures for the Collection of Sub-Slab Soil Gas Samples
- Sample Analytical Methods
- Sample Quality
- Instructions for Residents of Homes to Be Sampled
- Indoor Air Quality Building Survey

Appendix IV:

MassDEP's Recommended Specifications for the Design and Construction of SSD Systems

- General Performance Standards
- Sequence of Activities
- Pre-System Site Preparation
- Sub-Slab Communication Diagnostic Test
- System Design and Installation
- Chemical Constituents in SSDS Materials

Appendix IV:

MassDEP's Recommended Specifications for the Design and Construction of SSD Systems

- System Start-Up and Optimization
- Back-Drafting Evaluation
- Labels
- Recommended Report Format
  - Completion Report
  - Installation Checklist

Other Guidance - Schedule (latest)

- AUL Guidance & Historic Fill – December 2016
- PFOA/PFAS fact sheet – early 2017
- VPH GC/MS Method – December 2016

AEPMM (SSD Systems) Remote Monitoring

92 telemetry devices (53 RTNs) have completed the initial online registration step.

- 48 devices are completely registered (shutdown/restart transmitted in an acceptable format)
- 35 devices - working on formatting changes/haven't yet conducted shutdown restart tests
- 6 devices - MassDEP still trying to contact
- 3 devices - AEPMM is no longer required to maintain NSR

AEPMM Remote Monitoring

- 55% of RTNs where remote monitoring systems are required (i.e., supporting PS, TS or ROS) are completely registered/working correctly

Other AEPMM Concerns

- PS, ROS and TS with no registration ~ 40 sites
- Annual certification (for PS relying on AEPMMs) compliance

2017 MCP Amendments

- Draft List of Potential Amendments (posted with today's meeting materials) http://www.mass.gov/eea/agencies/massdep/news/advisory-committees/waste-site-cleanup-program-advisory-committee.html

- Some updates from 3/24/16 list

  Additions indicated in red

List of Potential Amendments

- Includes some major proposals as well as minor fixes/housekeeping items
  - Changes held over from the 2014 amendments process (PCE standard change, toxicity value hierarchy)
  - Changes identified over the course of implementing 2014 amendments and related guidance
  - More recent/other suggestions

- Items on List are under consideration… not all will necessarily be included in the Public Hearing Draft

Process/Timeframe for Amendments –

- Public Hearing Draft in Spring 2017
- Focused meetings on selected/major topics ahead of Draft…
  - **Imminent Hazard approach**
  - **Permanent Solution with Conditions**
  - **GW-1 exceptions (NPDWSA, 40.0924(2)(b)3.)**
  - **EPC and averaging**
  - **Other topics requiring shorter discussions (grouped)**

Amendments Meetings

- First meeting – potential Imminent Hazard revisions

  Wed., Nov. 16th, 9:30 – 11:30 am

  (No November WSCAC Meeting)

- Options for scheduling subsequent meetings